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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,561	02/13/2002	Bryan Franz Dufner	C-2199Re	3207
7590	01/04/2006		EXAMINER	
M P Williams 210 Main Street Manchester, CT 06040			ZHENG, LOIS L	
			ART UNIT	PAPER NUMBER
			1742	
DATE MAILED: 01/04/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/075,561

Applicant(s)

DUFNER ET AL

Examiner

Lois Zheng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 17-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 17-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Claims 15-16 and 20-21 are canceled in view of the amendment filed 30 April 2004. Therefore, claims 1-14 and 17-19 are currently under examination.
2. The indicated allowability of claims 1-14 and 17-19 is withdrawn in view of the newly discovered reference(s) to Taniguchi et al. US 6,083,638(Taniguchi) and Murphy et al. US 5,972,196(Murphy). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Taniguchi et al. US 6,083,638(Taniguchi).

Taniguchi teaches a fuel cell comprising a polymer electrolyte membrane(Fig. 2 numeral 11) having a first major surface in intimate contact with an anode(Fig. 2 numeral 12) and a second major surface in intimate contact with the cathode(Fig. 2 numeral 13). Taniguchi further teaches that porous support plates adjacent the anode and the cathode, wherein the porous support plates each comprises a bi-layer including hydrophobic phase means(Fig. 2 numeral 40C and 41C) for facilitating gas transfer

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through hydrophobic gas passages(Fig. 2, "F2") and hydrophilic phase means(Fig. 2 numeral 40D and 41D) for facilitating liquid transfer through hydrophilic liquid passages(Fig. 1, "F1"). The hydrophobic phase means as taught by Taniguchi may be a mixture of carbon black and a hydrophobic polymer such as PTFE (Fig. 11/Table 2, col. 6 lines 46-52) and the hydrophilic phase means as taught by Taniguchi may be a mixture of carbon black and a proton exchange resin such as NAFLON®(col. 5 line 42 – col. 6 line 5, col. 6 lines 46-52). Taniguchi further teaches that the hydrophobic phase means comprises 60% carbon black and 40% hydrophobic polymer(Fig. 11/Table 2) and the amounts of hydrophobic polymer and the amount of hydrophilic polymer are ranged from 5% - 60% and from 3-30% respectively(col. 13 lines 16-19). The hydrophobic and the hydrophilic polymers are loaded onto a porous substrate layer(col. 13 lines 35-41 and 55-61). The fuel cell of Taniguchi further comprises a water transport plate to supply cooling water(Fig. 1 numeral 110). The hydrophilic material of Taniguchi allows condensation product water of supersaturated steam to go through to humidify the polymer electrolyte membrane(i.e. wettability preserving compound)(col. 13 lines 27-32).

Therefore, Taniguchi anticipates instant claims 1-3, 6-10 and 13-14.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4-5, 11-12 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taniguchi et al. US 6,083,638(Taniguchi).

Regarding instant claim 17, the anode and cathode of Taniguchi read on the claimed anode support plate and the cathode support plate. Taniguchi further teaches that the anode is preferably formed of NAFLON®(i.e. hydrophilic substrate layer). Taniguchi further teaches a separator plate with gas channels(Fig. 1 numerals 20-21) and a water transport plate with coolant channels(Fig. 1 numerals 110-111).

Even though Taniguchi does not explicitly teach the claimed water transport plate having both a passageway for a coolant stream and another passageway for a gas stream, one of ordinary skill in the art would have found the claimed water transport plate obvious since the combination of the separator plate and the water transport plate as taught by Taniguchi performs the same function as the claimed water transport plate. It is well settled that the use of a one piece construction instead of the structure disclosed in the prior art would be merely a matter of obvious engineering choice. In re Larson, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965). See MPEP 2144.04.

Regarding instant claims 4-5, 11-12 and 18, based on the teachings of the amounts of carbon black, hydrophobic material and hydrophilic material in the porous support plates of Taniguchi, the examiner concludes that the amounts of carbon black, hydrophobic material and hydrophilic material as taught by Taniguchi overlap the claimed amounts of carbon black, hydrophobic material and hydrophilic material as recited in the instant claims. Therefore, a prima facie case of obviousness exists. The selection of claimed carbon black, hydrophobic material and hydrophilic material

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amounts would have been obvious to one of ordinary skill in the art since Taniguchi teaches the same utilities in its disclosed carbon black, hydrophobic material and hydrophilic material amount ranges.

Regarding instant claim 19, even though Taniguchi does not specifically teach the claimed porosity for the porous hydrophilic substrate layer(NAFLON®), one of ordinary skill in the art would have found the obvious to routinely optimize the porosity of the hydrophilic material to arrive at the claimed porosity of 65-75% since the porosity of the hydrophilic material directly affects the operation of the fuel cell based on how much liquid are transported across the porous support plates.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LLZ

ROY KING 
SUPERVISORY PATENT EXAMINER
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